Sectorial Analysis of Public Expenditure and Economic Growth In Nigeria: 1982 – 2012

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ABSTRACT

This study examined the sectorial analysis of public expenditure and economic growth in Nigeria. It employed ordinary least square approach as technique of analysis with time series data for the period 1982-2012. The variables were tested to determine their level of stationarity using Augmented Dickey Fuller (ADF) and Phillip-Perron. The series were found to be stationary. The results of the Co integration indicate that the hypothesis of non Co integration is rejected. The result of the Johansen Co integration test indicates three co integration equation at 5% level of significance and one co integration equation at 1% level of significance. The granger Causality test indicates both uni-causal and bi-causal relationship among variables. Two models were estimated and the results shows that agriculture, health, defense, transportation are positive and statistically significant determinants of economic growth in Nigeria at 5% percent level of significance. However, expenditure on education is negative and not significant. The result shows that Wagner's hypothesis does not hold in some of the variables In our estimated model and also invalidates Keynesian Paradigm of increase government expenditure. In Nigeria, Public Sector spending has been on the increase due to government commitment to Finance infrastructure, Civil Service and other reform programmes that cut across Ministries, Departments and Agencies (MDA's) and the structure of Nigeria public expenditure is broadly categorized into capital and recurrent expenditure. The size, structure and quality of public expenditure determine the pattern and form of growth in output of the economy. Therefore, the study recommend, for government to improve in her use of resources, issues of corruption, inefficiency and wastages must be addressed. There should be effective channeling of public funds to the provision of infrastructure especially education, health, power, transportation and defense that enhance welfare and productive activities.

Key words: Government expenditure, Economic growth, Economic development, infrastructure and GDP.

1.0   INTRODUCTION

Public expenditure is concerned with the utilization by government of the nation's resources with regards to the rules, regulations and policies that shape the planning, budgeting, forecasting, coordinating, directing, influencing and governing the inflow and outflow of funds in order to maximize the objective of the institution. In other words, public expenditure deals with government spending and the level of liquidity in the economy in order to achieve some stated objectives (Sharp and Slunger, 1970), there is a controversy regarding the economic system which would ensure that an economy is always on the path of growth. There is need to determine the size of government's involvement and its impact on the growth of the economy. While the classical theorists are of the view that government should have little or nothing to do with the economy, explaining that if government expenditure is too big, it will undermine economic growth by transferring additional resources from the productive sector of the economy   to government which uses them less efficiently. The Keynesian school on the other hand argued that the economy can only be boosted by active participation of government via its fiscal policy operation especially deficit spending which could provide short term stimulus to help end a recession or depression. In other words, Keynesian economies emphasize active participation in the economic activities of a nation through public expenditure and taxation. So, which of the two views points would ensure that economy is always on the path of growth is right and what are the reasons. Lindauer (1988).

The use of economic theory therefore is important in providing a framework for understanding how the economy works but evidence helps to determine which economic theory is most accurate. It is also important to ascertain whether government expenditure helps or hinders economic performance. However, economic theory does not automatically generate strong conclusion about the impact of government expenditure on economic performance.

Many economists would agree that there are circumstances when lower levels of government expenditure would enhance economic growth and other times when higher level of government expenditure would be desirable. Nwezeaku (2010).

Essentially, public expenditure has become an important tool in the stimulation of economic activities. The Keynesians however, do not have objections to smaller government when they argued that government expenditure could be reduced once the economy recovers so as to prevent inflation. They also postulated that there is a trade -off between inflation and unemployment and that government expenditure should be increased or decreased to steer the economy between too much of one or of the other.

The role of public expenditure can not therefore be over emphasized. In developed countries, it is employed as an instrument in the stimulation of investment activities and economic stability. Significantly, these roles are much more important in the less developed countries (LDCs) such as Nigeria in view of the active part they play in developing social overhands and in structure thereby, encouraging economic growth through investment in education, health services, transportation, power and communication facilities. Capital goods, industries, basic and key industries, enforcing contract and protecting properties. For a successful operation of rule of law, there must be a government spending.

Nigeria's economic philosophy which embraces mixed economy, gives the government a position of substantial importance in the economic activities of the country, this involvement is inextricably tied up to her spending programmes which are complimentary to policy formulation.

Kwanashie (1981) argued the public sector in Nigeria have great dominance in the economy, in particular, after independence in 1960 and increased immediately after the civil war in 1970 through to 1990s particularly with the increasing revenue from oil. Since then, the significance of public expenditure has become so vital that it can be said that a larger proportion of the country's Gross Domestic Product CGDP) is anchored on he spending decision of government. There decisions provide links between government's expenditure and economic growth of the country, in which case the dominance of the public sector requires the mobilization and expenditure of vast amount of resources. Thus, through its investment policy government could influence the pattern, volume and direction of aggregate demand and investment.

Nigeria is undoubtedly one of the most endowed nations of the earth, given the human and abundant natural resources; she ought to be one of the richest countries in the world. For instance, the country is endowed with natural resources which are in abundance all over the country the deposits have been explored in the last 45 years and have been a source of huge resources to the Federal government.

In spite of these, resources and after five decades of sovereignty, Nigeria economic contribution to global gross domestic product was put at 0.22 percent. The United Nations Development Index according to the report, Nigeria was ranked amongst countries with low development index at 153 out of 186 countries that were ranked. Life expectancy in Nigeria is placed at 52 years old while other health indicators reveal that only 1.9percent of the nation's budget is expended on health. 68.0 percent of Nigerians are stated to be living below $1.25 daily while adult illiteracy rate for adult (both sexes) is 61.3 percent (UNDP, 2013). Nigeria's economic growth is slow as output growth was consistently below her population growth rate for most part of 1980 through to 2000.

Thus Nigeria has not been able to harness her large population (about 168 million people) and its abundant natural resources which constitute the material conditions for development to propel rapid and sustainable development. Ahenba (2008), Nigeria has earned approximately $1.8trillion from oil exports in the last four decades, but she has not been able to leverage on the current account surpluses to build the capacity for rapid transformation of the economy to achieve sustainable growth. Rather, sectors whose contribution would not translate to growth are top on the priorities of government such as government expenditure on recurrent expenditure as against capital expenditure which would create employment, stimulate demand, leading to increase in demand for industrial goods e.t.c. according to a world bank Poverty Assessment Report (2000), Nigeria present a paradox of a rich nation with poor people.

Public expenditure is usually expressed in budgetary statements and has been a powerful tool for shaping the economy along growth path and to a considerable extent influence resource allocation in the private sector. The role of public expenditure is either to accommodate economic development of an economy. According to Scully (1989), data based on public expenditure as a fraction of national income show that public sector has an inevitable trend of growth in the long run why then would the Nigerian economy be different and remained underdeveloped despite huge public expenditure in the 30-45 years? The Nigerian case could then be said to be a

paradox. A country rich and endowed with both human and natural resources, a country with adequate rain and sunlight with fertile agricultural land and good climate conditions when compared to some other countries so that are located in the desert or mostly covered by ice and snow almost throughout the year, yet Nigeria is a country with many poor people. There is a problem somewhere, otherwise, why would about two thirds of the Nigerian people be said to be poor, despite a country with vast potential wealth. Revenue from crude oil has been increasing over the past decades. NBS (2010)

The nation's enormous wealth being the world's seventh largest exporter of oil, sixth largest producer in OPEC, Africa's largest Oil exporter and fifth biggest source of Unites State's oil import is a good potential for effective reduction and possibly eradication of poverty (National Planning Commission, 2004, Oil statistics, and Thomos and canagarajah, 2002), yet Nigeria is not only one of the poorest countries in the world but also Africa despite efforts towards reducing her poverty level. The high incidence of poverty in Nigeria has become a concern to policy makers and indeed all stakeholders in Nigeria because as observed by United Nation Development Programme (2001) it has not only increased from 27.2 percent in 1980 to 54.4 percent in 2004. it is estimated to be rising by l Percent in every 3 years.

The huge growth could have had a major impact on the growth and development of the country. It could have taken the lead in demonstrating how growth with poverty reduction can be achieved in Africa because Nigeria has all it takes. That is human and material resources to become the strongest economy in Africa and one of the leading economies in the world.

Attempt was made to examine what happened to the country's huge resources and why many citizens are still poor, why public expenditure did not lead to economic growth in Nigeria as the case of other developed countries.

As a result of these problems associated with government expenditure in Nigeria this paper therefore, seek to answer the following questions.

1. Is there casual relationship between government expenditure and economic growth in Nigeria?
2. Has government expenditure achieved desired objective in Nigeria?
3. What are the impacts of government expenditure on economic growth in Nigeria?

2.1   LITERATURE REVIEW

There are having been many empirical studies; although with mixed reaction is contradicting result on the roles of government expenditure on the economic growth. That government spending can influence the level of economy activities. For instance, Studies such as Ratner (1983), Aschauer (1989) and Munnell (1990) indicate that government investments are positively related to growth. Other studies such as E vans and Karas (1994), on the other hand, obtained a mixed result. The adoption of ordinary least squares reveals a positive correlation between the two proxies of government spending (services and capital spending) and economic growth. However, when a two-stage least squares techniques were used, a positive relationship could not be established in most cases, especially in public capita\. Evidence from Raynold, Mcmillian and Beard (1991), using a VAR model, also reveals that the effects of government spending on economic growth are small but generally significant. It explains about 8 - 10 percent of the forecast error variance in economic growth, using about 36 months, horizons. Most of these studies were from developed countries with little emphasis on developing countries like Nigeria. Resulting from dearth of empirical studies on this issue in Africa, Amin (1998) examines the effects of public investment expenditures on growth of the Cameroon's economic activities. Using an aggregate production function, he discovered a positive relationship between the two, even though the relationship could not be statistically established.

As earlier mentioned, attempts to empirically verify the relationship between a government spending and growth in Nigeria has not been well documented in the literature. This section reviews the findings from three studies that are directly related to this issue in Nigeria, namely, Ekpo (1995), Ogiogio (1995) and Odusola (1996). Ekpo (1995) regressed, the disaggregated components of government capital expenditures on private investment, using ordinary least squares approach with annual data for 1960 - 1990. The findings show that capital expenditures on transport and communication, agriculture, health and education positively influence private investments in Nigeria, which invariably enhances the growth of the overall economy. However, government capital expenditures on construction and manufacturing, crowd out private investments. By implication, the private sector is better placed to invest' in construction and manufacturing than the government.

Ogiogio (1995) examines the growth impact of recurrent, capital and sectoral expenditures over the period 1970 - 1993. The study observes the existence of long-run relationship between economic growth and government expenditures. Meanwhile, contemporaneous government recurrent expenditures have more significant effect than the capital expenditures while five year lags of capital expenditures are more growth inducive. The study, thus, argues that for effective assessment of the effect of capital investment programmes on economic growth, one would require a five-year planning horizon. And lastly, the study also indicates that government investment programmes in socio-economic infrastructure provide "a conducive, environment for private-sector led growth.

However, the fact that both government expenditures and economic growth are basically related makes any deductions from a single equation model invalid. This is owing to the possibility of simultaneity bias. In order to avoid this problem, Odusola (1996) adopted a simultaneous equations model to capture the interrelationship between military expenditures and economic growth in Nigeria. It is observed from the study that aggregate military expenditure is negatively related to growth at 10 percent significant level. And when decomposed into recurrent and capital military expenditures, the former was more growth retarding than the latter. The study, therefore, recommends that resources diversification away from military spending will have a positive impact on the economy.

Olson (1984) pointed out that economic theory did not provide a fully developed methodology that incorporated government in standard growth models. He however, identified two major avenues through which government activity may influence economic performance. In the first place, he posited government spending, particularly investment on goods that may enter directly into private sector production such as education and infrastructures. While on the other hand, government outlays may also indirectly influence the efficiency of private sector allocation of inputs and activities in such a way that government spending may correct market failures, guarantee property rights and the enforcement of contracts and provide essential public goods, thereby leading to positive effects on the economy. Conversely, government regulation may impose excessive burdens on the private sector by way of high taxes or borrowing to finance government spending that may distort private incentives. Moreover, if the financing of government projects bids up interest rate, the effect will be the crowding out of private investment, hence slowing down growth. The second channel mentioned by Olson was the efficiency of government as a producer as distinct from a provider of goods and services.

Taylor (1988) highlighted the role of government expenditure, which was that if public spending and private spending (capital formation) are truly complementary, then government projects and spending would stimulate entrepreneurs and enhance private investment, thus ensuring growth in the economy. Musgrave (1982) noted in his study that certain goods and services should be provided by the market while others should be provided publicly and made available free of charge to the users. However, other empirical works did not support Olson's theoretical analysis of the relationship between government spending and economic growth.

Landau (1983) found that the share of government consumption to GDP reduced economic growth was consistent with the pro-market view that the growth in government constrains overall economic growth. These findings were consistent with varying sample periods, weighting by population and mix of both 'developed and developing countries (104 countries). The conclusions were germane to growth in per capita output and do not necessarily speak to increase in economic welfare. Economic growth was also found to be positively related to total investment in education.

Landua (1986) extended the analysis to include human and physical capital, political, international conditions as well as a three year lag on government spending in GDP. Government spending was disaggregated to include investment, transfers, education, defense and other government consumption. The results in part mirrored the earlier study in that general government consumption was significant and had a negative influence on growth. Education spending was positive but not significant. It was unclear why lagged variables were included given that the channels through which government influence growth suggest a contemporaneous relationship.

Ram (1986) used cross-sectional data for 1960-1970 and 1970-1980 on separate time series estimates for some countries as well as taking real government consumption as his measure of government size. He found a positive correlation between growth in government expenditures and overall economic growth. Ram concluded that both the externality and differential productivity effects are positive, so productivity in the government sector appears to be higher than private sector. He marked a rigorous attempt to incorporate a theoretical basis for tracing the impacts of government expenditure to growth through the use of production functions specified for both public and private sectors. The data spanned 115 countries to derive broad generalizations for the market economics investigated. He found government expenditure to have significant positive externality effects on growth particular in the developing countries (LDC) sample, but total government spending had a negative effect on

growth. Lin (1994) used a sample of 62 countries (1960-85) and found that non-productive spending had no effect in growth in the advanced countries but a positive impact in LDCs.

Josaphat, et. al., (2000), investigated the impact of government spending on economic growth. In Tanzania (1965-1996) using time series data for 32years. They formulated a simple growth accounting model, adapting Ram (1986) in which total government expenditure is disaggregated into expenditure on (physical) investment, consumption spending and human capital investment. It was found that increased productive, expenditure (physical investment) have a negative impact on growth and consumption expenditure relates positively to growth, and which in particular appears to be associated with increased private consumption. The results revealed that expenditure on human capital investment was insignificant in their regression and confirm the view that public investment in Tanzania has not been productive.

Rutkowski (2009) employed simple autoregressive model on quarterly variables over the period 1999-2007 to assess the relation between investment and growth in Poland. Impulse response functions point to positive relationship between public investment, private investment and GDP growth. In line with other papers, a demand stimulus was noticed after 1-2 quarters, with 1 percentage point of GDP higher public investment increasing GDP growth by more than percentage point (quarter on quarter). The supply-side effect, that is, an upsurge in private investment encouraged by the expected productivity gain materialises after 2-3 quarters and reaches a maximum after 6 quarters, with 1 percentage point of GOP more public investment increasing private investment by more than % percentage point of GDP. Overall, his analysis points to a positive impact of public investment on growth in Poland and does not show apparent crowding-out effects.

Neuser (1993), Ford and Poret (1991), used public capital data for the G7 countries over the period 1970- 1987, applied Total factor productivity growth and co-integration techniques to the sample. They reported insignificant and unstable results. Taylor-Lewis (1993), using the same data set for the same countries under observation, but regressing a Cobb-Douglas function found that the contribution of public physical infrastructure to output were insignificant. Some studies have specifically examined the impact of public expenditure in infrastructure on economic growth in Nigeria with a view to expenditure between 1953 and 1966, Philips (1971) observed that revenue is a vital factor of public expenditure. He found that rising revenue was accompanied by rising expenditure with a high degree of correlation put at 87 percent ($R^2 = 0.87$) between current revenue as percentage of GDP and total consumption coefficient being significant at 1percent. He concluded that the GDP elasticity of consumption expenditure was 3 with a high degree of correlation between consumption expenditure and per capita income.

Lee and Alex (1989 and 1992) opined that the impacts of infrastructural deficiencies on the Nigerian industrial sector, shows that manufacturing undertook significant expenditure to affect deficiencies in publicly provided infrastructural services. This was supported by Adenikinju (2003), in his study on electricity infrastructure failures in Nigeria. These studies failed to establish if there is a relationship between infrastructure services and manufacturing output and whether the relationship even subsists in the long-run.

Sola (2008) examines the direction and the strength of the relationship between infrastructural services and manufacturing output in Nigeria using time series data from 1981 to 2005. To determine the shocks that are the primary causes of variability in the endogenous variables, the study used Vector Autoregressive (VAR) model. Also Granger causality test was carried out. Results showed that the present transport and electricity service in Nigeria did not cause growth to occur in the manufacturing sector. It was also revealed in the study that telecommunication and education had contributed to the growth in the manufacturing sector.

Nitoy, et. a1, (2003) employed the same disaggregated approach as followed by Josaphat, et. al., (2000), they examined the growth effects of government expenditure for a panel of thirty developing countries (including Nigeria) over the decades of the 1970s and 1980s, with a particular focus on sectoral expenditures. The primary research results showed that the share of government capital expenditure in GDP is positively and significantly correlated with economic growth, but current expenditure is insignificant. The result at sectoral level revealed that government investment and total expenditures on education are the only outlays that remain significantly associated with growth throughout the analysis. Although public investments and expenditures in other sectors (transport and communication, defense) was found initially to have significant associations with growth, but such relationship collapsed when government budget constraint and other sectoral expenditures were incorporated into the analysis. Also private investment share of GDP was found to be associated with economic growth in a significant and positive manner.

Hassan and Fatai (2009} employed cointegration and ordinary least square approach to examine the relationship between public spending and economic growth in Nigeria using time series data for the period 1970-2007. Two equations were specified. The result of the first equation showed that the ratio of government revenue (oil and non oil) to nominal GDP were statistically significant though the non oil exerted negative influence on growth rate of real per capita GDP. Also, the ratio of government expenditure on economic services and community social services to nominal GDP were statistically significant exerting positive influence on growth rate of real per capita GDP per capita. In the second equation, the ratios of government revenue and capital expenditure to nominal GDP and lagged ratio of private in vestment to nominal GDP Were not statistically significant though the exert positive relationship. All test conducted at 5 percent level of significance.

Adesoye, et. al., (2010), examines the link between government spending and economic growth in Nigeria over the last three decades (1977- 2006) using time series data to analyze the Ram (1986) model. Three variants of Ram (1986) model were developed-regressing Real GDP on Private investment, Human capital investment, Government investment and Consumption spending at absolute levels, regressing it as a share of real output and regressing the growth rate real output to the explanatory variable as share of real GDP. Result showed that private and public investments have insignificant effect on economic growth during the review period. Nurudeen and Usman (2009) examine the impact of government expenditure on economic growth in Nigeria using disaggregated analysis. They employed co integration and error correction model for time series data spanning the period 1979-2007. The explanatory variables account for 58.96 percent changes in economic growth. The total capital expenditure, total recurrent expenditure, health, education, transport, communication, and overall fiscal balance are statistically significant in explaining changes in economic growth. However, expenditure on defence and agriculture are not significant in explaining growth.

3.1 METHODOLOGY AND ANALYTICAL FRAMEWORK OF THE MODEL

In this section we describe briefly a simple model of public expenditure and economic growth to motivate our econometric approach. In particular, we consider public expenditure as an input in the production of final output (either as physical output or services) being financed by the government. Economic growth is the consequence of accumulation of factors that permit an economy to take advantages of opportunities for increasing its income. To identify the determinants of factor accumulation rate and, therefore, the rate of growth, it is common practice to start by denoting production opportunities of the economy as a function that maps the vector of factors into aggregate output, Y. For the purpose of this study, we follow the approach of Cooray (2009) who identified four types of factors: Labour, L, capital, K, infrastructure, N, and all other exogenous factors that influence factor productivity, Q. Assume that labour and the productivity factor grow exogenously at rates land q, respectively, while K and N grow endogenously. We let the production function be Cobb-Douglas with constant returns to scale and, without further loss of generality, assume that Q represents labour productivity:

$$Y = {}_k\alpha N \beta (QL)^{1-\alpha\beta,} \qquad\qquad 3.1$$

Where α and β are positive parameters. Factors other than the ones listed above may be involved in production as well. But the model can be kept simple by viewing all those factors as part of those listed.

Public expenditure is mostly distinguished from private expenditure due to network of externalities. Also, cost recovery from users tends to be more difficult and inefficient because the services are viewed as basic needs (e.g., water), or exclusion of non-paying users is too costly (e.g., urban streets or rural roads), education, health services expenditure. All these elements imply that greater potential for regulatory intervention and institutional arrangements play a more important role in the provision of social services through public expenditure.

Furthermore, the parameters α and β may diverge from shares of their corresponding factors in output. This latter effect is important because it suggests that the small expenditure or cost shares of public expenditure in GDP may be a misleading indicator of the contribution of those sectors to the economy. In fact, the entire debate about the role of public expenditure revolves around the claim that β is much larger than the share of public expenditure. To estimate β straightforward procedure may seem to be an estimation of the production function in log-level or, alternatively, in first difference or growth form:

$$Yy = (1\text{-}\alpha - \beta)q + \alpha yk + \beta Yn \qquad\qquad 3.2$$

where

$Yy, Yk, and\ Yn\ are\ the\ growth\ rates$ of the per-capita endogenous variables:

$$y = \frac{Y}{L}, K = \frac{K}{L}, AND\ n = \frac{N}{L},\text{Respectively.}$$

This is, indeed, what the initial attempt at measuring the role of public expenditure tried to do.

3.2   MODEL SPECIFICATION

Following the approach of the study by Nurudeen and Usman (2009), our growth function can be specified in the form:

$$GDP_t = f(AE,\ TE,\ HE,\ EE,\ DE) + \mu \qquad\qquad 3.3$$

This can be further expressed as:

$$GDP_{,} = \beta o + \beta_1 AE + \beta_2 TE + \beta_3 HE + \beta_4 EE + \beta_5 DE + \mu \qquad\qquad 3.4$$

Where growth in Gross Domestic Product (GDP) is used as proxy for economic growth; AE is government total expenditure on agriculture; TE is total government expenditure on transport and communication; HE is total government expenditure on health; EE is total government expenditure on education; DE is total government expenditure on defense; and IJ is the stochastic or error term (i.e white noise), while 't' is the time index. Specifying the model in logarithmic linear form will transform equation 3.4 to:

$$logGDPt = \beta o + \beta_1 logAE + \beta_2 logTE + \beta_3 logHE + \beta_4 logEE + \beta_5 logDE + \mu \quad 3.5$$

The a priori expectation of the series is such that AE is expected to be positive (+); TE is expected to be positive (+); HE is expected to be positive (+); EE is expected to be positive (+); DE is expected to be positive (+).

Furthermore, we also specify a model that estimates the impact of total capital expenditure and total recurrent expenditure. This is to determine the impact of sectoral expenditure separately from that of total expenditure and also to identify which component of the total expenditure has significant impact on growth. We specify the model as follows:

$$GDP_1 = f(TCE + TRE) + \mu \qquad\qquad 3.6$$

Specifying the model in logarithmic linear form will transform equation 3.6 to:

$$logGDP_t = \beta o + \beta_1 logTCE + \beta_2 logTRE \qquad\qquad 3.7$$

4.1   RESULTS AND ANALYSIS

A simple linear ordinary least squares method of estimation was applied to our earlier outlined methods. The overall results are expressed below.

MODEL I

$$LOG\ GDP = 1.627506 + 4.273AE + 1.408HE - 1.464EE + 0.9386DE + 3.060TE$$
$$t = \qquad (4.368) \quad (1.812) \quad (0.700) \quad (-1.173) \quad (1.972) \quad (0.694)$$
$$R^2 = 0.597$$
$$Adjusted\ R^2 = 0.530$$

$$Standard\ Error = 0.785$$
$$F - statistic = 101.893$$
$$D - W = 1.63$$

Statistical Result

Table 4.1

VARIABLE	*VALUES*
R^2	0.597
Adjusted R^2	0.530
Standard Error of the Regression	0.785
$F - Statistic$	101.893
$D - W\ Statistic$	1.63

Source: Author's Computation, 2014

MODEL II

$$LOG\ GDP = 2.8275 + 1.2731TCE - 3.05954TRE$$
$$t = \quad (2.368) \quad (0.8121) \quad (-2.694)$$
$$R^2 = 0.797$$
$$Adjusted\ R^2 = 0.630$$
$$Standard\ Error = 0.7253$$
$$F - statistic = 87.89347$$
$$D - W = 1.64$$

Table 4.1.3 *Results of the stationarity (unit root) test*

Variables	ADF-statistic	Critical values	Order of integration
LOG GDP	-3.501271 (-0.515266)	1% = -2.7076 5% = -2.9798 10% = -2.6290	*Stationary at 1st diff.*
LOG AE	-2.60998 (0.00052)	1% = -2.4572 5% = -1.0400 10% = -1.6608	*Stationary at level*
LOG HE	-3.374287 (-1.818867)	1% = -2.8572 5% = -2.0400 10% = -1.6608	*Stationary at 1st diff.*
LOG EE	-4.016250 (-1.944002)	1% = -3.6959 5% = -2.9750 10% = -2.6265	*Stationary at 1st diff.*
LOG DE	-5.515721 (0.0001)	1% = -3.6959 5% = -2.9750 10% = -2.6265	*Stationary at first differenced*
LOG TE	-3.32368 (0.00008)	1% = -2.6959 5% = -1.9750 10% = -1.6265	*Stationary at first difference (1)*
LOG TRE	-6.153956 (0.0000)	1% = -3.6959 5% = -2.9750 10% = -2.6265	*Stationary at first differenced*
LOG TCE	-3.141839 (0.0023)	1% = -2.630762 5% = -1.950394 10% = -1.611202	*Stationary at first differenced (1)*

Source: Author's Computation, 2014

4.2 DISCUSSION OF RESULTS

The equation in the first model regressed LOG(AE), LOG(TE), LOG(HE), LOG(EE), LOG(DE), on LOG(GDP), while the second model regressed LOG(TCE) and LOG(TRE) on LOG(GDP).

The regression line generally implies that public expenditure is associated with increase in economic growth.

Based on the analysis given, the standard errors of Gross Domestic Product in relation to the two models are considerably minimized and hence the estimates are fairly reliable.

Also going by the t-values theoretically (-2.10 < t < 2.101 at 5% level of significance). The t-values calculated fall within the acceptance region and therefore we reject (H0) and accept (H1) that are significant and hence, their corresponding regressors appear to contribute to the explanation of the variation in Y.

Given our adjusted R^2 to be 0.597, and 0.630 in model 1 and 2 respectively, the variation in the parameter estimates, Government Expenditure on agriculture (AE), Total Government Expenditure on Transportation and Communication (TE), Total Government Expenditure on Health (HE), Total Government Expenditure on Education (EE) and Total Government Expenditure on Defense (DE) do cause a considerable variation in the Gross Domestic Product (GDP).

The variation in the regressants in relation to Gross Domestic Product is explained by about 52% and 63% respectively in the regression planes. This implies that only 48% and 37% of the fluctuations in the regressants are attributable to a random disturbance or exogenous variable outside the regression plane respectively. The R^2 are significant.

The F-ratio, which is test of the existence of a significant relationship between the explanatory variables taken together and the dependent variable, shows that the whole regression equation is statistically significant, the F-ratio value of 101.8934 and 87.89437 are highly significant, easily passing the significance test at the 1%, 5% and 10% levels. Thus, the hypothesis of a significant linear relation between the GDP in Nigeria and the independent variables (AE, TE, HE, EE, DE, TCE and TRE) are in fact validated. That is, there is no doubt that a significant linear correlation exist between the GDP and the above mentioned variables. The error of prediction is minimized at the ratio of the standard of estimation (SE) to the mean of the dependent variable. This implies that the estimated GDP has a smaller residual variable, smaller variance of the error of prediction and therefore of a good predictive ability and this further shed light on the overall goodness of fit of the estimated equation.

The result above also shows that the Total government expenditure on agriculture, (AE), Transport and Communication (TE), Defense (DE) and Total expenditure (TCE) show positive and significant relationship with the gross domestic product. However, total government expenditure on education and total recurrent expenditure show negative relationship with the gross domestic product.

The Durbin-Watson statistics of 1.63 and 1.64 indicating the absence of autocorrelation; however, a test of stationarity with the help of a unit root test is also conducted.

The results of unit root test are contained in the appendix. The results revealed that all the variables of the model are found to be stationary at both 1 percent, 5percent, and 10 percent level with first difference (d(1)), which is indicated by ADF results at all levels less than the critical values in negative direction.

5.1   CONCLUSION

From the proceeding analysis of data collected from the Central Bank of Nigeria and National Bureau of Statistic conclusion may be reached as follows: that there is a substantial evidence to indicate that total government expenditure on agriculture, health, transport, defence shows a positive significant relationship with the gross domestic product while total government expenditure on education and total recurrent expenditure show a negative relationship with the gross domestic product.

The results of unit root test revealed that all the variables of the model are found to be stationary at both percent 5 percent and 10 percent level with first difference (1), which is indicated by ADF results at all levels less than the critical values in negative direction.

That, if the federal government of Nigeria wants to achieve rapid economic growth, it will have to increase its total capital expenditure.

That there are some problems facing public expenditure management system in Nigeria, such as corruption, misallocation resources and unpriotize capital projects.

The relationship between government spending on public infrastructure and economic growth tends to be an important analysis in developing countries, most of which have experienced increasing levels of public expenditure overtime, expenditure on infrastructure investment and productive activities ought to contribute positively to growth.

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